Progress Report - P2 Planning for Chlorine in Wastewater Effluents

The P2 plans have been fully prepared and are in the process of being implemented

Pollution Prevention (P2) Planning is a process by which organizations can improve their environmental protection by strategically planning to reduce or eliminate pollution before it is created.

Last Updated: May 2008

This P2 Planning Notice is on track to **reduce releases** of chlorine in wastewater effluents.

The most popular P2 actions being proposed by the facilities involve **eliminating the use of chlorine** by using alternatives meaning that pollution will be prevented at the source.

Information Reported for the Notice

In December 2004, Environment Canada published a Pollution Prevention (P2) planning Notice in the *Canada Gazette*. The persons subject to this Notice are owners or operators of wastewater systems that in either 2004 or 2005 discharged, to surface waters, 5 000 cubic metres per day or more of effluent with a total residual chlorine concentration of greater than 0.02 mg/L. To date, 84 wastewater systems in Canada meet these criteria and must prepare and implement a P2 plan that takes into consideration reducing their TRC concentrations to 0.02mg/L or lower by December 15, 2009. Owners of wastewater systems, e.g. municipalities, must submit information to the federal Minister of Environment once their P2 plan has been prepared and again once they have implemented the activities outlined in their P2 plan. These submissions are made available to the public and the information presented in this document is derived from these submissions.

The Minister of Environment has received 84 Declaration of Preparation submissions declaring that a P2 Plan has been prepared and implementation has begun. Moreover, four of the 84 facilities have declared that they have already fully implemented their P2 plan.

Overall Reductions

Chart 1illustrates the reduction of total residual chlorine (TRC). Based on submitted information, over 2 million kg/year of TRC to the water environment was being discharged. **Once P2 Plans have been implemented, TRC discharges will be reduced by 95%** to approximately 97 000 kg/year. Most owners of wastewater systems are reporting a 99-100% reduction in TRC. Only one owner is anticipating not meeting 0.02 mg/L.

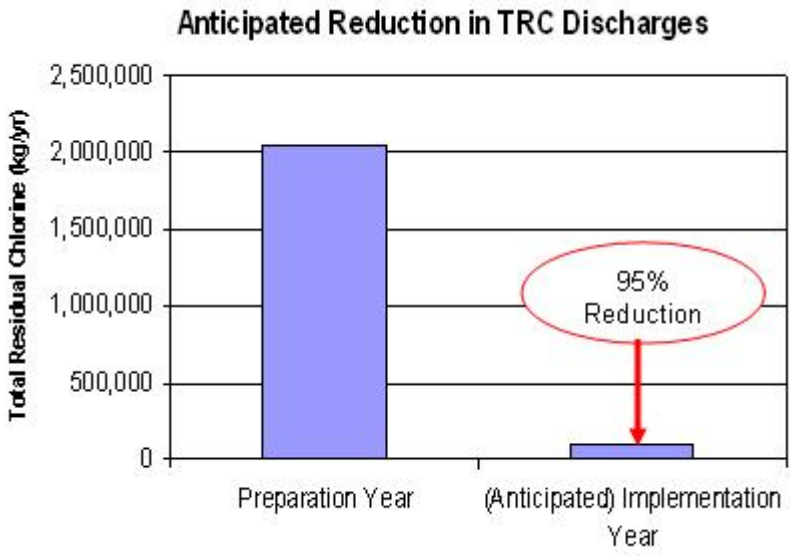

Chart 1: Reported anticipated reduction of TRC discharges (as an average) once P2 Plans have been implemented.

Progress towards meeting objectives

There are several alternative technologies available to disinfect wastewater effluents. The P2 Planning Notice allows owners of wastewater systems some flexibility to choose the disinfection technology that best suits their needs to reduce residual chlorine to 0.02 mg/L.

Submissions to the Minister of Environment indicate that ultraviolet irradiation and dechlorination are the two main alternative technologies of choice. A few submissions indicate that other actions such as overall wastewater system upgrades are being planned in addition to reducing chlorine.

The dates for implementation of the alternative disinfection technologies vary. Overall, 93% of the facilities have indicated they will meet 0.02 mg/L on or before the December 15, 2009 deadline and 26% have indicated they will meet 0.02 mg/L after the deadline.

Technologies Being Reported in Order to Meet Risk Management Objective	
Ultraviolet disinfection	24
Dechlorination	31
Alternate disinfection technology	3
Upgrade facility and implement new disinfection technology	3
Ozone treatment	2
Discontinue chlorination	2

Overall Achievements of the Notice

To date, a 95% reduction in total residual chlorine (TRC) discharges is anticipated. In order to achieve this reduction, **83% of the facilities are reporting equipment or process modification.** This way, the chlorinated compounds are eliminated because alternative processes or equipment is used in place of chlorine. In some cases, the scope of anticipated and completed actions go beyond "chlorine" and cover water/ energy waste and source control actions for other substances found to be toxic under CEPA 1999 such as mercury and NP/NPEs.

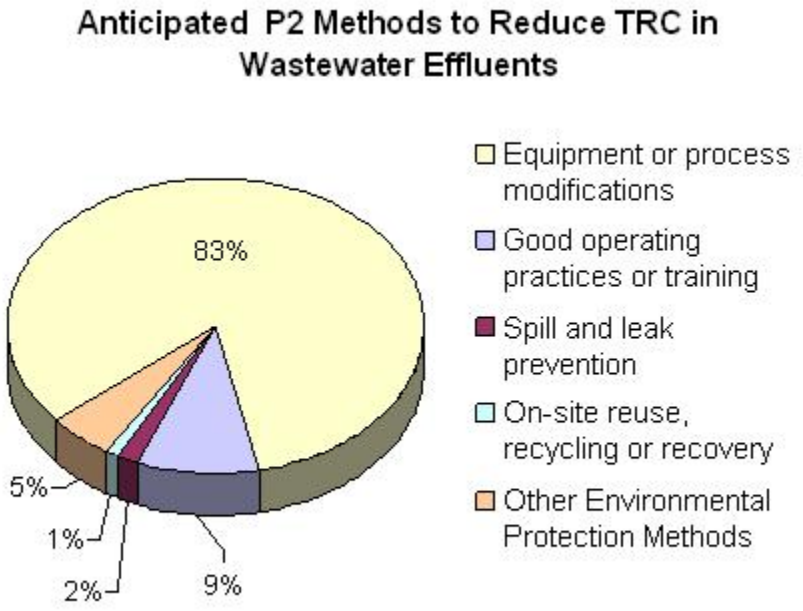

Chart 2: Anticipated P2 Methods to Reduce TRC in Wastewater Effluents

Looking Ahead: Environment Canada's Proposed Regulatory Framework for Wastewater

Over the last four years, Environment Canada has been working with provincial and territorial governments to develop a Canada-wide Strategy for wastewater effluents under the auspices of the Canadian Council of Ministers of the Environment (CCME). Over this same time period, Environment Canada has been providing general information to interested parties on its intention to develop wastewater effluent regulations under the *Fisheries Act*. Environment Canada's objective in working with the provinces and territories is to establish a collectively agreed-to risk management approach within a harmonized regulatory framework. From October 2007 to January 2008 Environment Canada consulted interested parties on its *Proposed Regulatory Framework for Wastewater* which reflects core elements of the CCME Strategy, includes wastewater effluent regulations and standards for chlorine in wastewater effluents. Further information is available at: www.ec.gc.ca/wastewater.

Chlorine in Wastewater Effluent: what is it and why reduce it?

Over the past century, the use of chlorine has become a common method used to disinfect wastewater effluents. Chlorine is a powerful disinfectant and is easy to use. In Canada, there are approximately 400 wastewater treatment systems that use chlorine and discharge wastewater effluents to surface waters such as rivers, streams, lakes, and oceans. Total discharges are estimated to be approximately 6 million cubic meters/day.

Following detailed scientific assessments, inorganic chloramines and chlorinated wastewater effluents were found to be toxic under the *Canadian Environmental Protection Act, 1999*. These scientific assessments demonstrated that either substance may enter the environment in a quantity or concentration or under conditions that may have an immediate or long-term harmful effect on the environment or its biological diversity; or they may constitute a danger to the environment on which life depends.

P2 Planning was selected as it allows facilities to choose an alternative disinfection technology that best suits their needs in order to meet the Risk Management Objective.

Sources: Pollution Prevention Planning Database and Web site www.ec.gc.ca/cepap2